

EMC TEST REPORT

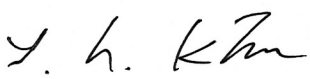
Project No.	LBE20190502	Issue No.	0
Applicant	Name of organization	Samsung Electronics Co., Ltd.	
	Address	(Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea	
	Date of application	March 13, 2019	
EUT	Type of device	☒ All other Receivers subject to part15 ☒ Class B Personal Computers and peripherals ☒ Other Class B digital devices and peripherals ☒ FM Broadcast Receiver	
	Equipment authorization	☒ Certification ☐ Supplier's Declaration of Conformity	
	FCC ID	A3LSMG889A	
	Kind of product	Mobile Phone	
	Model No.	SM-G889A	
	Variant Model No.	Refer to clause 4.6	
	Manufacturer	SAMSUNG ELECTRONICS CO., LTD 94-1, Imsu-dong, Gumi-si, Gyengsangbuk-do, 730-722, Republic of Korea	
Applied Standards		47 CFR Part 15, Subpart B, Class B / ANSI C63.4-2014	
Test Period		March 25, 2019 ~ March 29, 2019	
Issue date		March 29, 2019	
Test result : Complied The equipment under test has found to be compliant with the applied standards. (Refer to the attached test result for more detail.)			
Tested by : Jeong-Soo Kim 		Reviewed by : Young-Hun Kim 	
The test results in this report only apply to the tested sample. This report must not be reproduced, except in full, without written permission from Global CS Center.			
Global CS Center of Samsung Electronics Co., Ltd. (Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea			

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1. Report Information

1.1 Revision history

No.	Revised detailed information
Issue 0	There are no revisions and this version is basic test report.

1.2 RSE test report no.

No.	Remark
4788768228-E1	The cellular receiver mode refers to the radiated spurious emissions test report.

2. Summary of test results

2.1 Emission

The EUT has been tested according to the following specifications:

Applied	Test type	Applied standard	Result
☒	Conducted Disturbance (Mains port)	47 CFR Part 15 Subpart B / ANSI C63.4-2014 (Class B)	Complied
☒	Radiated Disturbance		Complied

3. General Information

3.1 Test facility

The Global CS Center is located on Samsung Electronics Co., Ltd. at (Maetan-dong) 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea. All testing are performed in Semi-anechoic chambers conforming to the site attenuation characteristics defined by ANSI C63.4, CISPR 32, CISPR 16-1-4 and Shielded rooms. And all antennas are properly calibrated using ANSI C63.5:2017.

The Global CS Center is operated as testing laboratory in accordance with the requirements of ISO/IEC 17025:2005.

4. Test Setup configuration

4.1 Test Peripherals

The cables used for these peripherals are either permanently attached by the peripheral manufacturer or coupled with an assigned cable as defined below.

The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Mark	Description	Model No.	Serial No.	Manufacturer / Trademark	FCC ID
A	Mobile Phone	SM-G889A	-	SAMSUNG	A3LSMG889A
B	Battery	EB-BG888BBE	-	SAMSUNG	-
C	Headset	GH59-15097A	-	SAMSUNG	-
D	Data Cable	EP-DN930CWE	-	SAMSUNG	-
E	Micro SD Card	64GB	-	SAMSUNG	-
F	Laptop Computer	Latitude5580	1CHRYM2	Dell	-
		Latitude5580	D3HRYM2	Dell	-
G	Laptop AC Adapter	LA65NM130	5D77	Dell	-
		LA65NM130	5DEA	Dell	-
H	Mouse	AA-SM7PCP	BDV8J48P4393	SAMSUNG	-
		SC-1000	1034000281	SAMSUNG	-
I	OTG Gender	EE-UG970	-	SAMSUNG	-
J	Router	DIR-806A	RF0F1D5000688	D-Link	-
		DIR-806A	RF0F1D8011504	D-Link	-
K	Travel Adapter	EP-TA300	R37KACB0263SE3	SAMSUNG	-
L	Desktop Dock	EE-DG889BBU	R37KCDG05P1RT3	SAMSUNG	-

4.2 EUT operating mode

To achieve compliance applied standard specification, the following mode(s) were made during compliance testing:

4.2.1 Conducted Emission

No.	Operating mode
1	Camera (rear) + Charging (w/ TA) + Cellular receiver (GSM850 Center Frequency) + FM (Low Ch.)
2	Camera (front) + Charging (w/ TA) + FM (Mid Ch.)
3	Charging (w/ TA) + FM (High Ch.)
4	Video + Audio playback from internal memory data + Docking Charging (Desktop Dock w/ TA)
5	USB Data Communication with PC (from external memory data)

4.2.2 Radiated Emission

No.	Operating mode
1	Camera (rear) + Charging (w/ TA) + FM (Low Ch.)
2	Camera (front) + FM (Mid Ch.)
3	FM (High Ch.)
4	Video + Audio playback from internal memory data + Docking Charging (Desktop Dock w/ TA)
5	USB Data Communication with PC (from external memory data)

4.3 Details of Sampling

Customer selected, single unit.

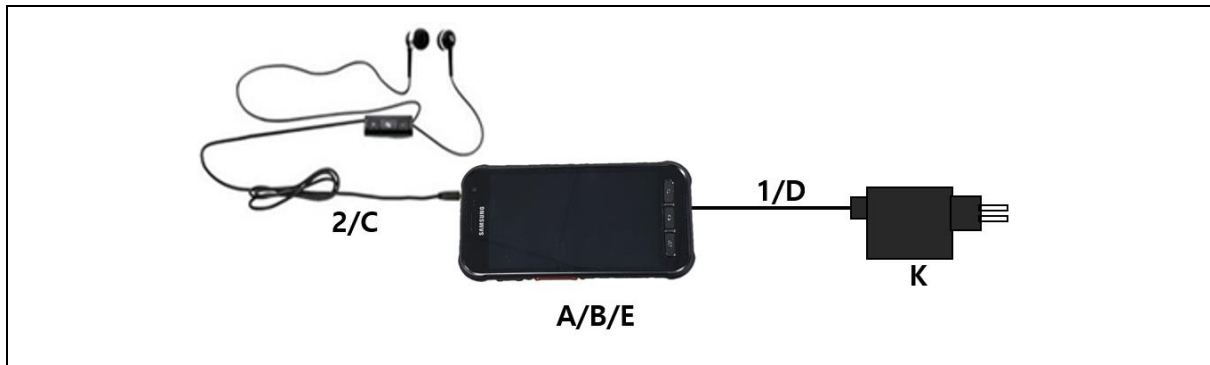
4.4 Used cable description

The EUT is configured, installed, arranged and operated in a manner consistent with typical applications. Interface cables/loads/devices are connected to at least one of each type of interface port of the EUT, and where practical, each cable shall be terminated in a device typical of actual usage. The type(s) of interconnecting cables to be used and the interface port (of the EUT) to which these were connected:

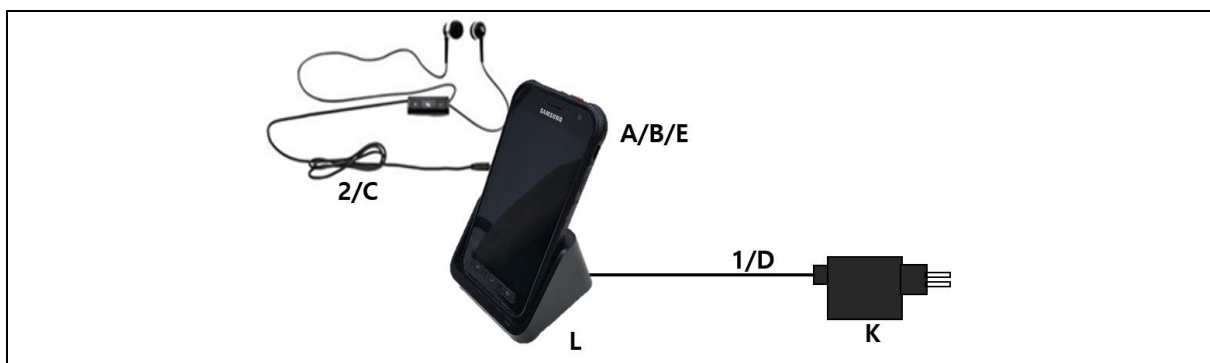
No.	Connected cable	Length [m]	Shielded [Y/N]	Note
1	Data Cable	1.2	Y	From EUT to Laptop Computer / Desktop Dock
2	Headset	1.5	N	For EUT
3	Power	1.8	N	From Laptop Computer to AC Adapter
4	Power	1.5	N	For Laptop AC Adapter
5	LAN	1.5	Y	From Laptop Computer to Router
6	USB	1.5	N	From Laptop Computer to Router for DC Power
7	USB	1.2	N	From OTG Gender to Mouse (AA-SM7PCP)
8	USB	2.2	N	From OTG Gender to Mouse (SC-1000)

4.5 Test arrangement

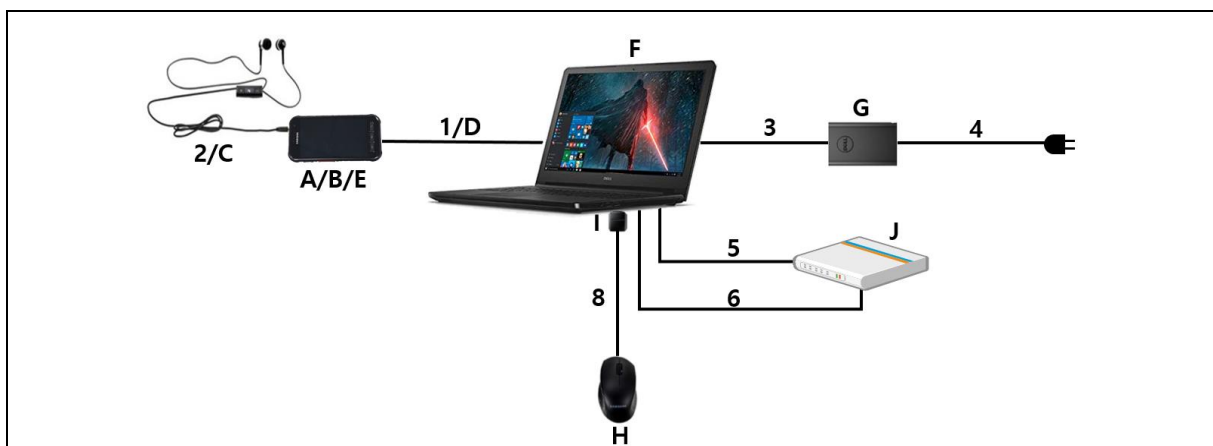
4.5.1 Conducted Emission



[Mode 1 - 3]

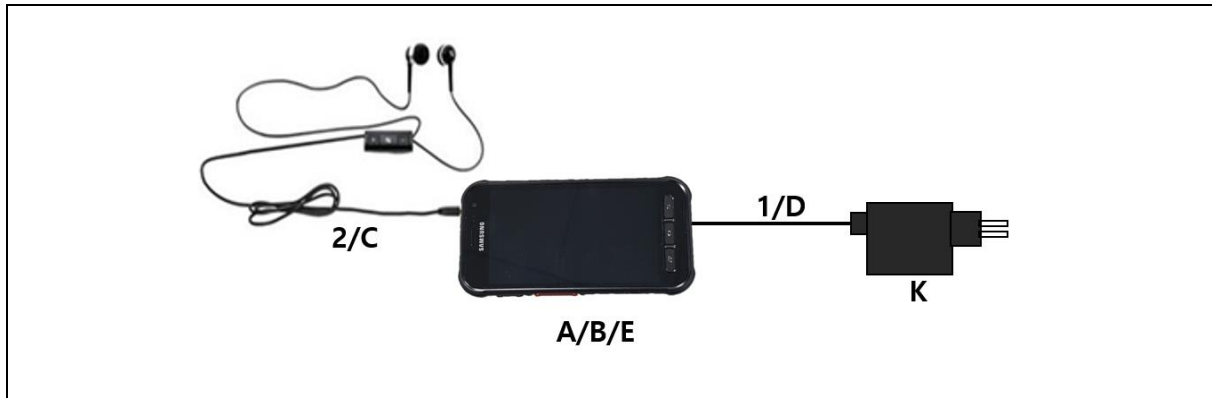


[Mode 4]



[Mode 5]

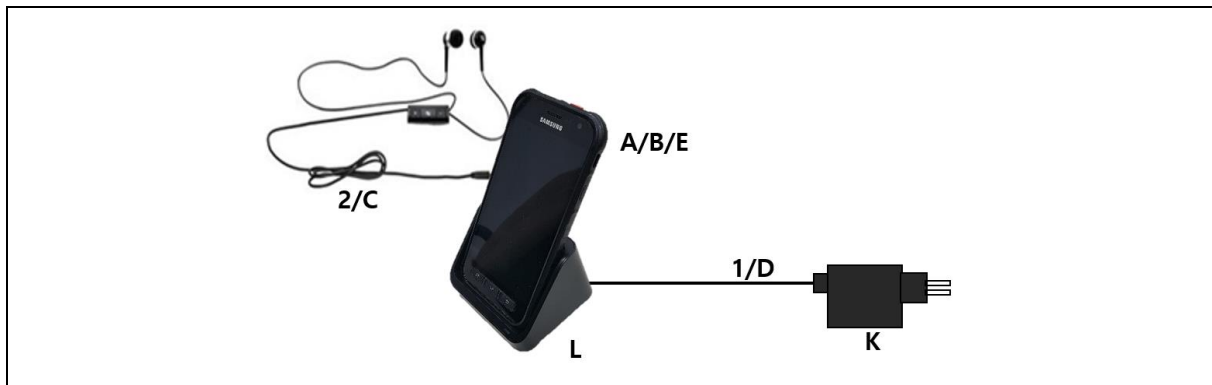
4.5.2 Radiated Emission



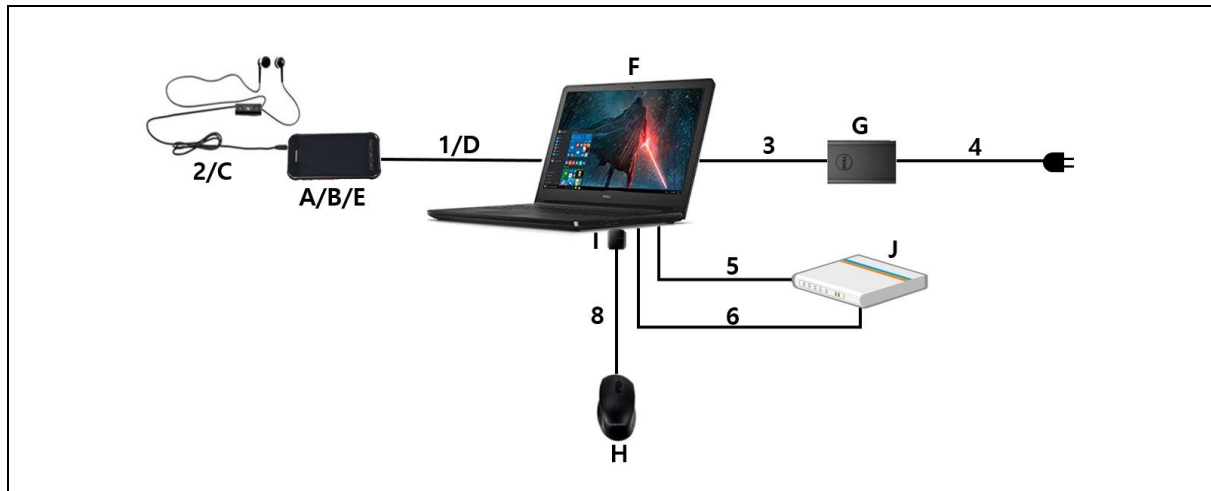
[Mode 1]



[Mode 2 - 3]



[Mode 4]



[Mode 5]

4.6 EUT Description

The EUT is a bar type Mobile Phone which can operate on GSM 850/900/1800/1900, WCDMA FDD1/2/4/5, LTE FDD1/2/3/4/5/7/12/14/20/29/30/66, LTE TDD38/39/40/41 and incorporate Bluetooth, ANT+, Wi-Fi, GNSS, FM Radio, NFC, Camera, MP3 and MP4 player.

4.6.1 The variant models

- None

4.7 EUT Frequencies

The highest frequencies (Generated and used)	Frequency [MHz]
Wi-Fi	5 825

4.8 Test configuration and condition

The system was configured for testing in a typical fashion that a customer would normally use. Cables were attached to each of the available I/O Ports. Where applicable, peripherals were attached to the I/O cables. All the external I/O ports are exercised, as well as internal and the external SD card, by writing and reading arbitrary data or charging with TA.

The EUT was investigated in three orientations and the worst case orientation is reported.

RX mode(850MHz) testing was performed with the GSM850 RX Test mode at center frequency. All licensed communication (850MHz) RX mode, GSM/WCDMA/LTE, test results are not significantly different.

The FM radio mode radiated testing was performed with the Low/Mid/High channel.

The video and music were repetitively played connected to the earphone.

The camera of the EUT was operated continuously.

Power source for the EUT operating was supplied by CVCF made by the Pacific Corp.

- Test Voltage : AC 120 V, 60 Hz

4.9 Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus: (According to CISPR 16-4-2 and UKAS M3003)

4.9.1 Emission

Test type		Measurement uncertainty (C.L. 95 %, k = 2)
Conducted disturbance	AC Mains	3.52 dB
Radiated Disturbance (Below 1 GHz)	Horizontal	4.99 dB
	Vertical	4.90 dB
Radiated Disturbance (Above 1 GHz)	Horizontal	5.33 dB
	Vertical	5.32 dB

5. Results of individual test

5.1 Conducted disturbance

The EUT is connected to a LISN via travel adapter. If the EUT is connected to the Laptop Computer USB port, the Laptop AC adapter is connected to a LISN.

Both conducted lines are measured in Quasi-Peak and CISPR-Average mode, including the worst-case data points for each tested configuration. The EUT measured in accordance with the methods described in standards.

Limits for conducted disturbance at the mains ports of Class B ITE

Frequency range Limits [MHz]	Resolution Bandwidth [kHz]	Limits [dB(μV)]	
		Quasi-peak	Average
0,15 to 0,50	9	66 to 56	56 to 46
0,50 to 5	9	56	46
5 to 30	9	60	50

NOTE 1 The lower limit shall apply at the transition frequency.
NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

5.1.1 Test instrumentation

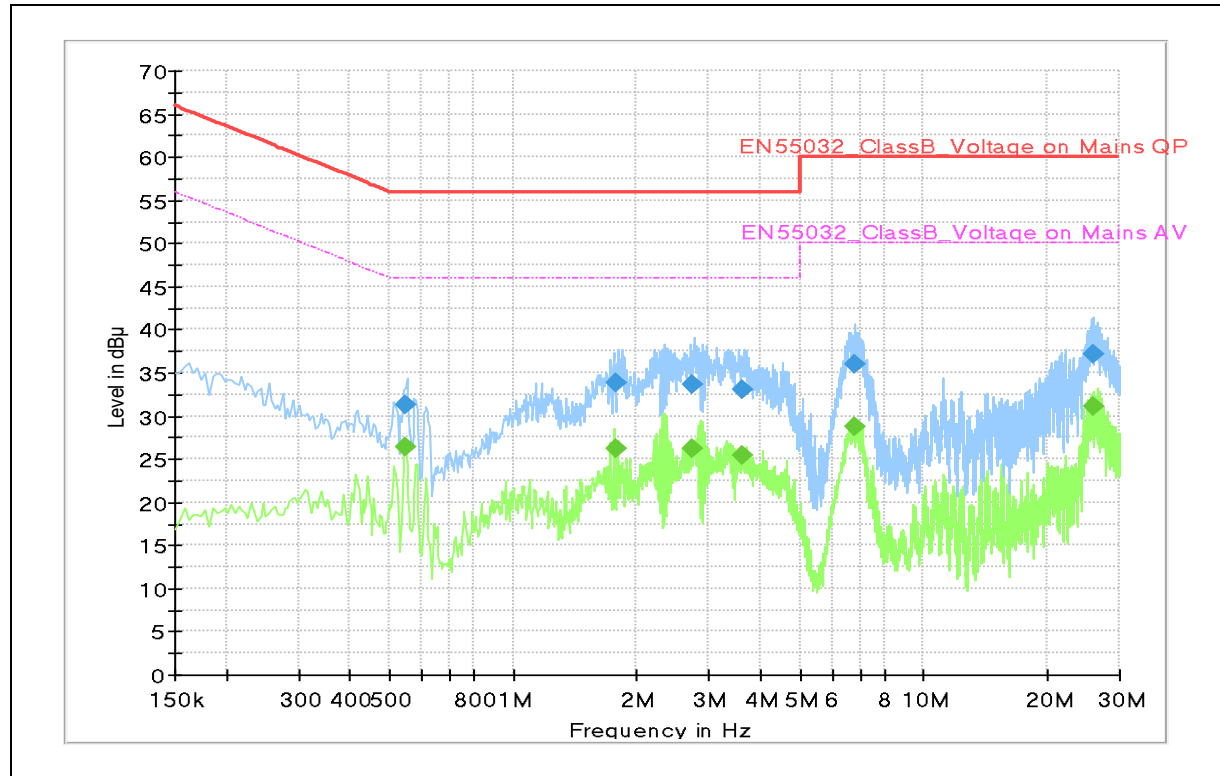
EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Calibration	
					Date	Interval (Month)
E5I-109	Universal Radio Communicator	CMU200	R&S	110431	2018-12-10	12
E5I-123	EMI Test Receiver	ESU8	R&S	100475	2018-05-13	12
E5I-127	LISN	ENV216	R&S	102061	2018-07-23	12
-	Test software	EMC32	R&S	Ver 9.26.01	-	-

5.1.2 Temperature and humidity condition

Test date	2019-03-25	Test engineer	Jeong-Soo Kim
Climate condition	Ambient temperature	(22.1 ~ 22.5) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(38.5 ~ 38.9) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(102.2 ~ 102.4) kPa	Limit (86.0 to 106.0) kPa
Test place	Shield Room (SR8)		

5.1.3 Test results

☐ Operating Mode 1: AC Mains



QP / CAV final measurement results table:

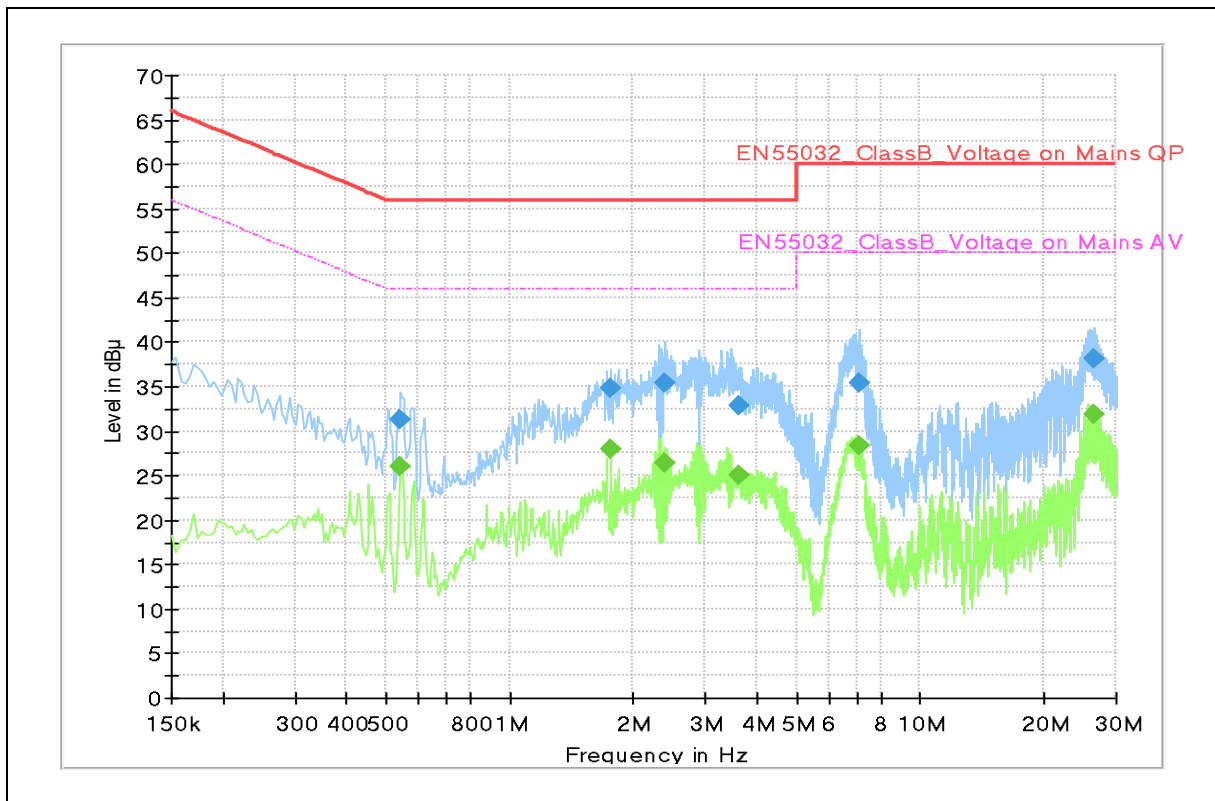
Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.549	---	26.4	46.0	19.6	L1	10.2
0.549	31.3	---	56.0	24.7	L1	10.2
1.789	---	26.2	46.0	19.8	L1	10.0
1.789	33.8	---	56.0	22.2	L1	10.0
2.745	---	26.3	46.0	19.7	L1	10.0
2.745	33.7	---	56.0	22.3	L1	10.0
3.637	---	25.4	46.0	20.6	L1	10.0
3.637	33.0	---	56.0	23.0	L1	10.0
6.785	---	28.8	50.0	21.2	L1	10.0
6.785	35.9	---	60.0	24.1	L1	10.0
25.977	---	31.1	50.0	18.9	N	10.8
25.977	37.1	---	60.0	22.9	N	10.8

Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 2: AC Mains


QP / CAV final measurement results table:

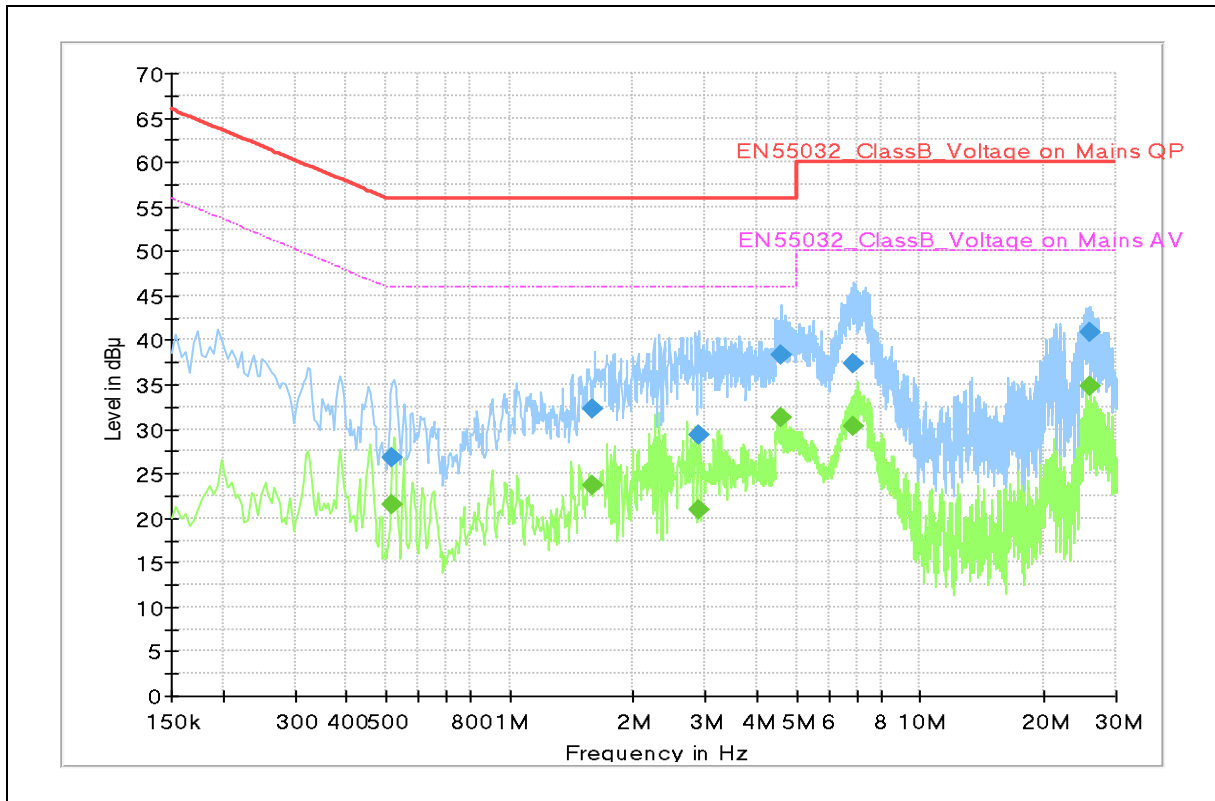
Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.541	---	26.0	46.0	20.0	L1	10.2
0.541	31.3	---	56.0	24.7	L1	10.2
1.761	---	28.0	46.0	18.0	L1	10.0
1.761	34.9	---	56.0	21.1	L1	10.0
2.385	---	26.4	46.0	19.6	L1	10.0
2.385	35.5	---	56.0	20.5	L1	10.0
3.625	---	25.1	46.0	20.9	L1	10.0
3.625	32.8	---	56.0	23.2	L1	10.0
7.093	---	28.3	50.0	21.7	L1	10.0
7.093	35.4	---	60.0	24.6	L1	10.0
26.497	---	32.0	50.0	18.0	N	10.8
26.497	38.1	---	60.0	21.9	N	10.8

Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 3: AC Mains


QP / CAV final measurement results table:

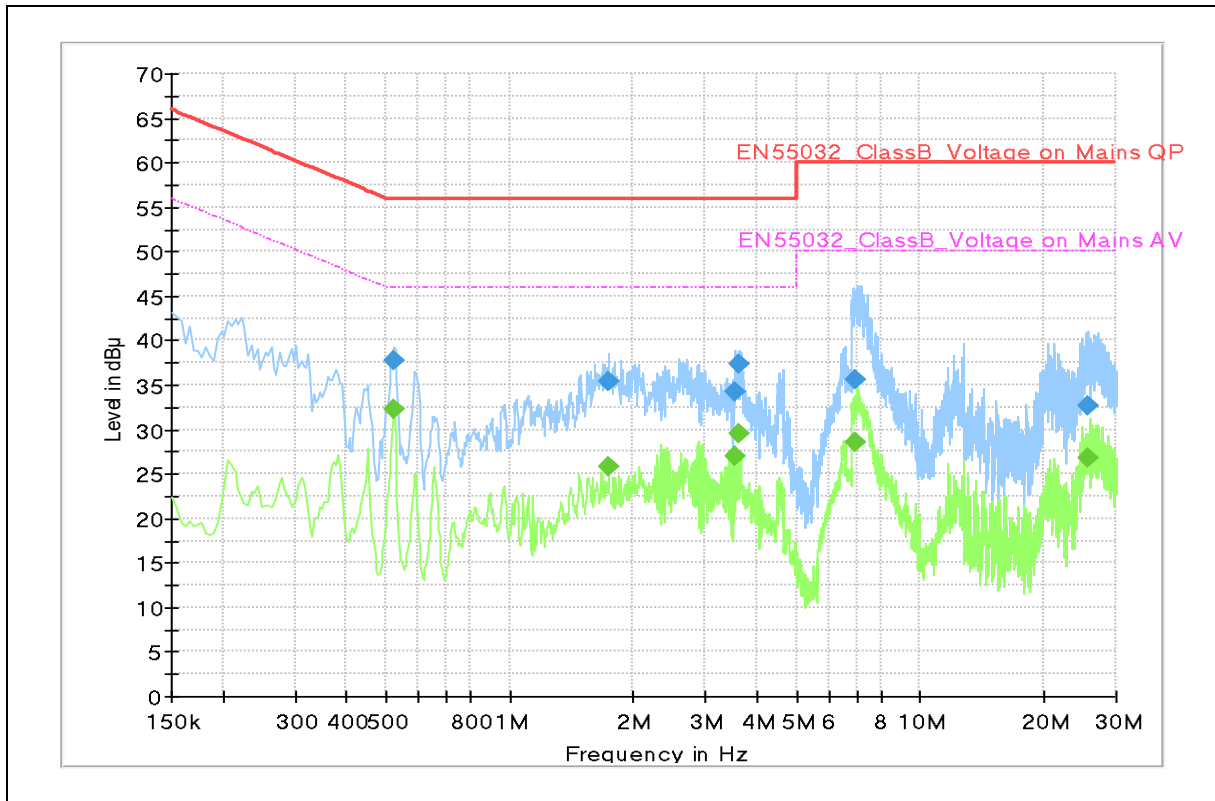
Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.517	26.8	---	56.0	29.2	N	10.2
0.517	---	21.4	46.0	24.6	N	10.2
1.601	32.3	---	56.0	23.7	N	9.9
1.601	---	23.7	46.0	22.3	N	9.9
2.893	---	20.8	46.0	25.2	N	9.9
2.893	29.3	---	56.0	26.7	N	9.9
4.569	---	31.2	46.0	14.8	L1	10.0
4.569	38.3	---	56.0	17.7	L1	10.0
6.861	---	30.3	50.0	19.7	L1	10.0
6.861	37.4	---	60.0	22.6	L1	10.0
25.901	---	34.8	50.0	15.2	N	10.8
25.901	40.8	---	60.0	19.2	N	10.8

Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 4: AC Mains


QP / CAV final measurement results table:

Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.521	---	32.2	46.0	13.8	L1	10.2
0.521	37.7	---	56.0	18.3	L1	10.2
1.749	---	25.8	46.0	20.2	L1	10.0
1.749	35.5	---	56.0	20.5	L1	10.0
3.549	---	26.9	46.0	19.1	L1	10.0
3.549	34.2	---	56.0	21.8	L1	10.0
3.621	---	29.5	46.0	16.5	L1	10.0
3.621	37.3	---	56.0	18.7	L1	10.0
6.989	---	28.6	50.0	21.4	L1	10.0
6.989	35.7	---	60.0	24.3	L1	10.0
25.499	---	26.7	50.0	23.3	N	10.8
25.499	32.6	---	60.0	27.4	N	10.8

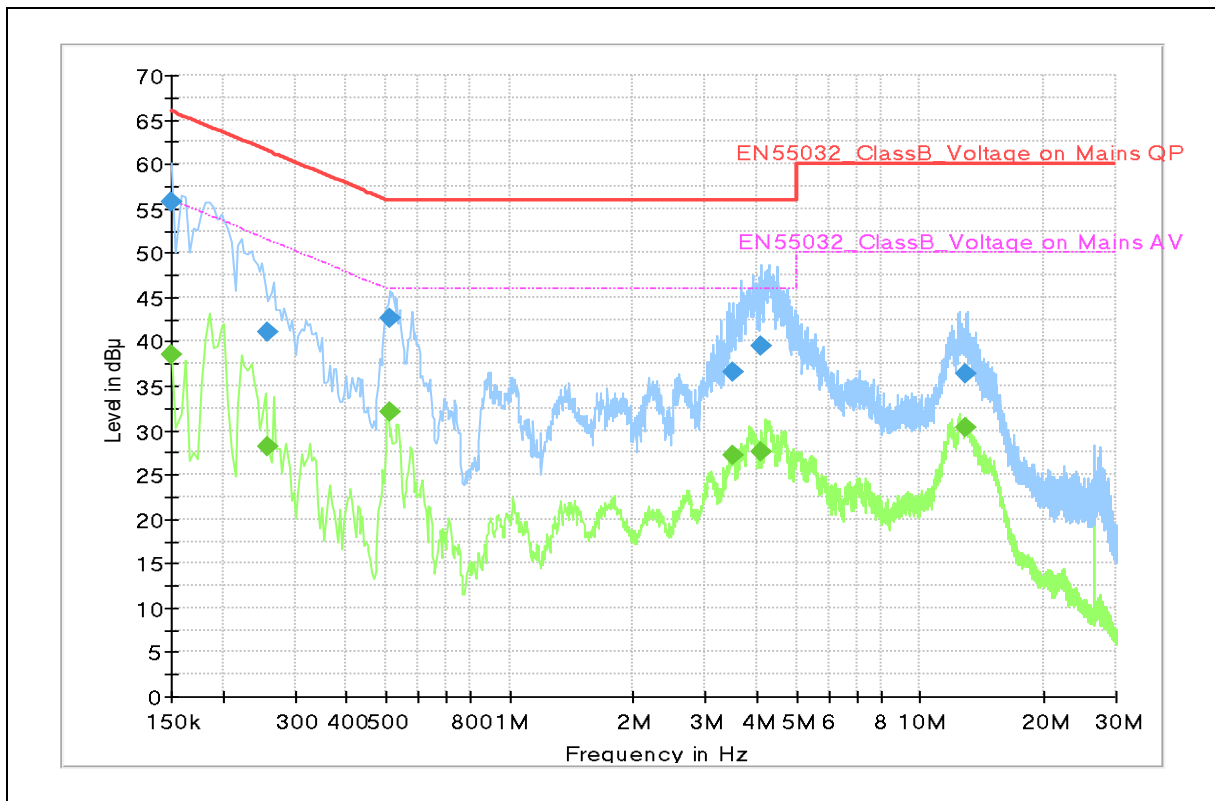
Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

□ Operating Mode 5: AC Mains



QP / CAV final measurement results table:

Frequency (MHz)	QP (dBμV)	CAV (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.150	55.8	---	66.0	10.2	N	9.9
0.150	---	38.6	56.0	17.4	N	9.9
0.257	---	28.2	51.5	23.3	N	9.8
0.257	41.1	---	61.5	20.4	N	9.8
0.513	---	32.0	46.0	14.0	L1	10.2
0.513	42.7	---	56.0	13.3	L1	10.2
3.511	36.6	---	56.0	19.4	L1	10.0
3.511	---	27.2	46.0	18.8	L1	10.0
4.113	---	27.6	46.0	18.4	L1	10.0
4.113	39.5	---	56.0	16.5	L1	10.0
12.973	---	30.4	50.0	19.6	L1	10.3
12.973	36.3	---	60.0	23.7	L1	10.3

Note 1) Two graphs measured for both Live(L1) and Neutral(N) of the LISN are combined into one graph.

Note 2) Level (QP and/or CAV) = Meter Reading (QP and/or CAV) + Corr. (LISN Insertion Loss + Cable Loss)

Margin (QP and/or CAV) = Limit – Level (QP and/or CAV)

QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

5.2 Radiated disturbance

The following data lists the significant emission frequencies, measured levels, correction factors (for antenna and cables), orientation of table, polarization and height of antenna, the corrected reading, the limit, and the amount of margin.

Peak measurements were made over the changeable frequency range 30 MHz to 1 GHz at a measurement distance of 10 m for the following antenna and turntable arrangements:

Antenna Height [cm]	Antenna Polarisation	Resolution Bandwidth [kHz]	Video Bandwidth [kHz]	Turntable position [degrees]
100 ~ 400	Horizontal, Vertical	120	300	Continuous

Measurements within 6 dB of the limit were then maximized by adjusting turntable position. Final measurements were made using quasi-peak detector.

Peak/CISPR-Average measurements were made over the changeable frequency range 1 GHz to 40 GHz or 5th harmonics of the highest frequency generated or used in the device or on which the device operate or tunes at a measurement distance of 3 m for the following antenna and turntable arrangements. The measurements above 1 GHz were performed with the bore-sighting antenna aimed at the EUT.

Antenna Height [cm]	Antenna Polarisation	Resolution Bandwidth [MHz]	Video Bandwidth [MHz]	Turntable position
100 ~ 400	Horizontal, Vertical	1	3	Continuous

Measurements within 6 dB of the limit were then maximized by adjusting turntable position. Final measurements were made using peak and CISPR-average detectors.

Limits for radiated disturbance of Class B ITE at a measuring distance of 3 m and 10 m

Frequency range Limits [MHz]	Field Strength		
	3 m [$\mu\text{V/m}$]	3 m [dB($\mu\text{V/m}$)]	10 m [dB($\mu\text{V/m}$)]
30 to 88	100	40.0	29.5
88 to 216	150	43.5	33.0
216 to 960	200	46.0	35.5
Above 960	500	54.0	43.5

Results checked manually; and points close to the limit line were re-measured.

5.2.1 Test instrumentation

EMC No.	Test Instrument	Model name	Manufacturer	Serial No.	Calibration	
					Date	Interval (Month)
E5I-022	Signal Generator	SMB100A	R&S	175856	2018-05-11	12
E5I-016	EMI Test Receiver	ESU8	R&S	100482	2018-06-08	12
E5I-021	EMI Test Receiver	ESU40	R&S	100376	2019-01-30	12
E5I-149	Horn Antenna	HF907	R&S	102525	2018-06-15	24
E5I-039	Signal Conditioning Unit	SCU-18	R&S	10211	2019-01-23	12
E5I-037	Wide Band Horn Antenna	WBH 18-40K	R&S	11201	2017-10-13	24
E5I-042	Signal Conditioning Unit	SCU-40A	R&S	10004	2018-09-05	12
E5I-120	BiLog Antenna	CBL6112D	TESEQ	36997	2018-04-23	24
E5I-072	BiLog Antenna	CBL6112D	TESEQ	36009	2018-04-23	24
E5I-075	Preamplifier	310N	SONOMA	332018	2018-05-25	12
E5I-076	Preamplifier	310N	SONOMA	332019	2018-05-25	12
-	Test software	EP7RE	TOYO	Ver 5.8.2	-	-
-	Test software	EMC32	R&S	Ver 9.25.00	-	-

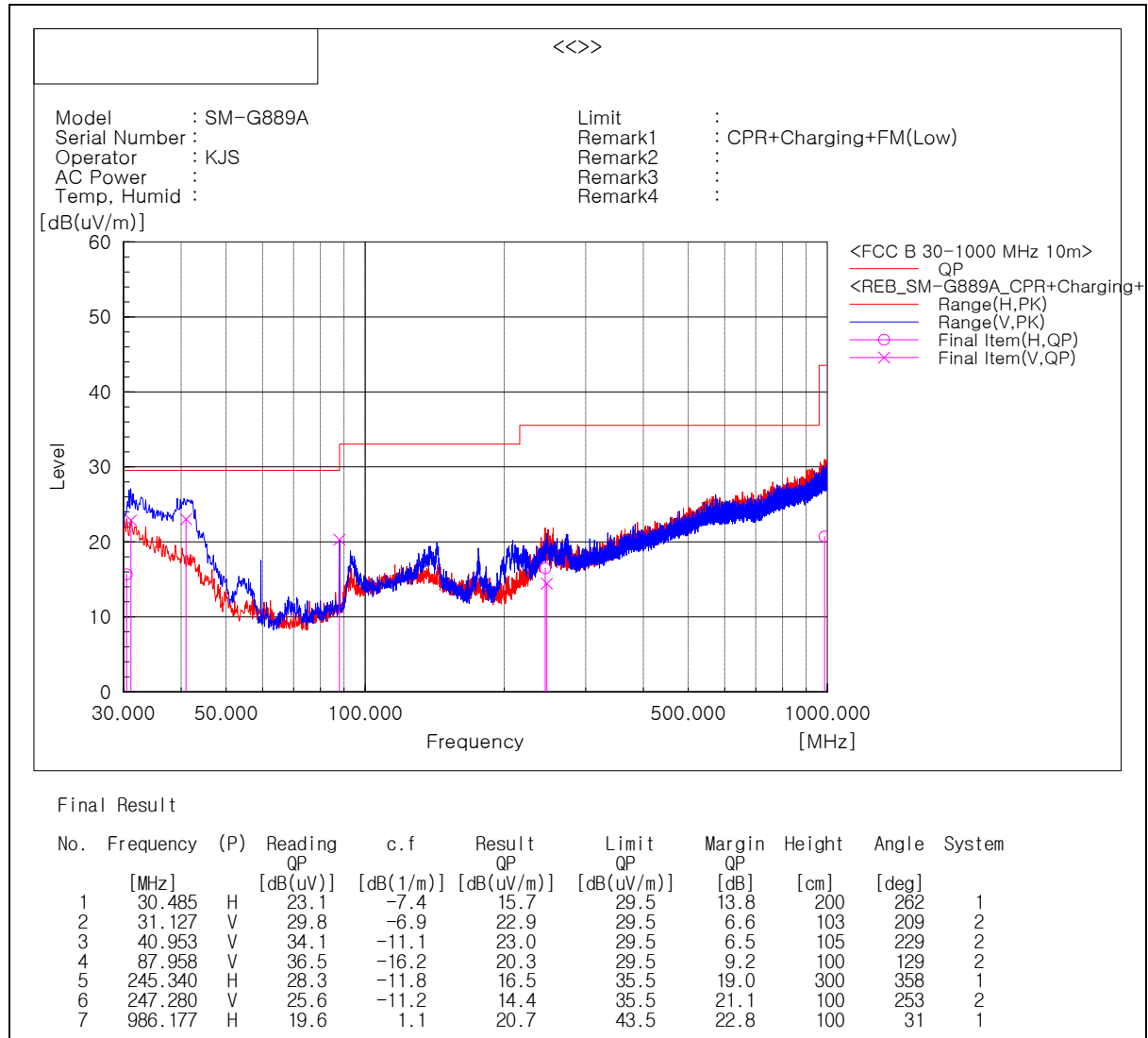
5.2.2 Temperature and humidity condition

Test date	2019-03-29	Test engineer	Jeong-Soo Kim
Climate condition	Ambient temperature	(23.1 ~ 23.6) °C	Limit (15.0 to 35.0) °C
	Relative humidity	(47.8 ~ 48.2) % R.H.	Limit (25.0 to 75.0) % R.H.
	Atmospheric pressure	(101.4 ~ 101.9) kPa	Limit (86.0 to 106.0) kPa
Test place	Semi-Anechoic Chamber (SAC4)		

5.2.3 Test results

☐ Operating Mode 1

- Frequencies below 1 GHz



* Radiated emissions (Rx frequency 87.958 MHz) from the transceiver shall be ignored

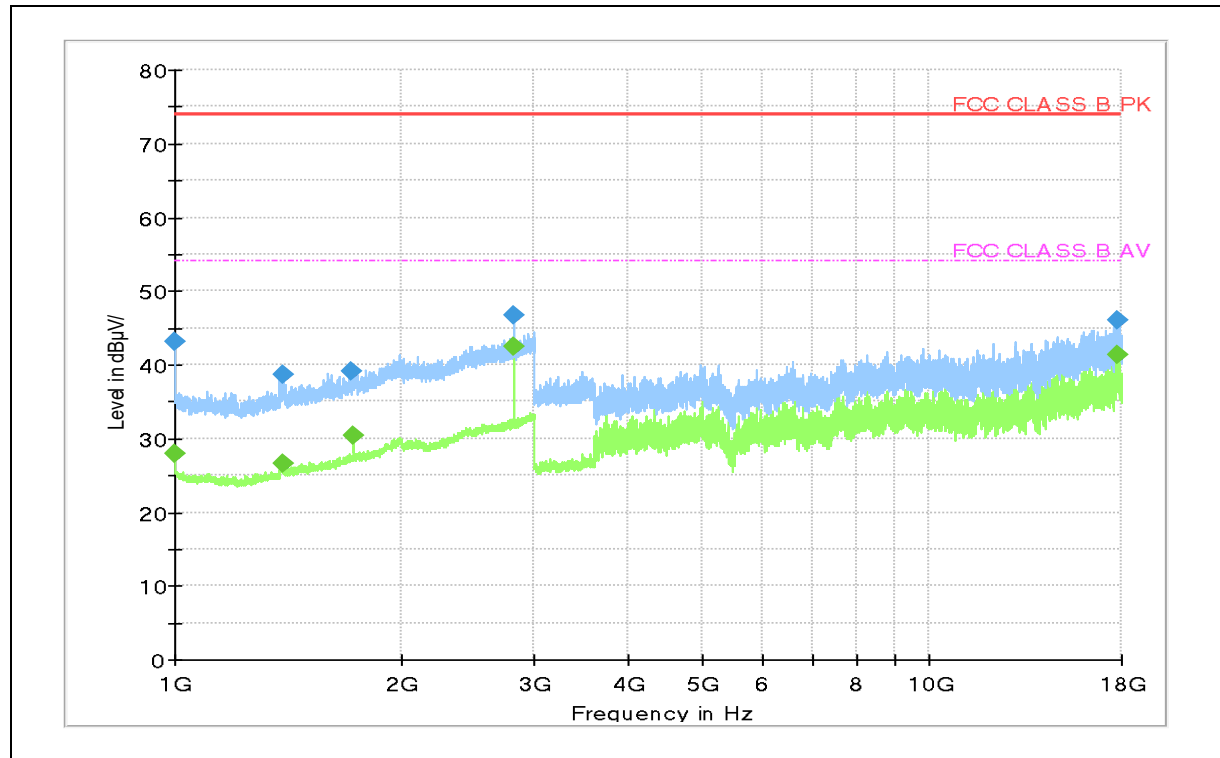
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz

Frequency (MHz)	PK (dBμV)	CAV (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 000.000	---	27.9	54.0	26.1	100.0	H	0.0	7.0
1 000.000	43.2	---	74.0	30.8	100.0	H	0.0	7.0
1 390.500	38.8	---	74.0	35.2	100.0	V	308.0	7.8
1 394.000	---	26.6	54.0	27.4	100.0	V	54.0	7.9
1 719.000	39.1	---	74.0	34.9	100.0	H	346.0	10.2
1 723.500	---	30.4	54.0	23.6	100.0	H	272.0	10.2
2 812.000	---	42.4	54.0	11.6	100.0	H	70.0	15.2
2 812.000	46.8	---	74.0	27.2	100.0	H	70.0	15.2
17 757.000	---	41.4	54.0	12.6	100.0	V	147.0	30.4
17 763.000	46.0	---	74.0	28.0	100.0	V	177.0	30.4

Note 1) We have also tested from 18 GHz to 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

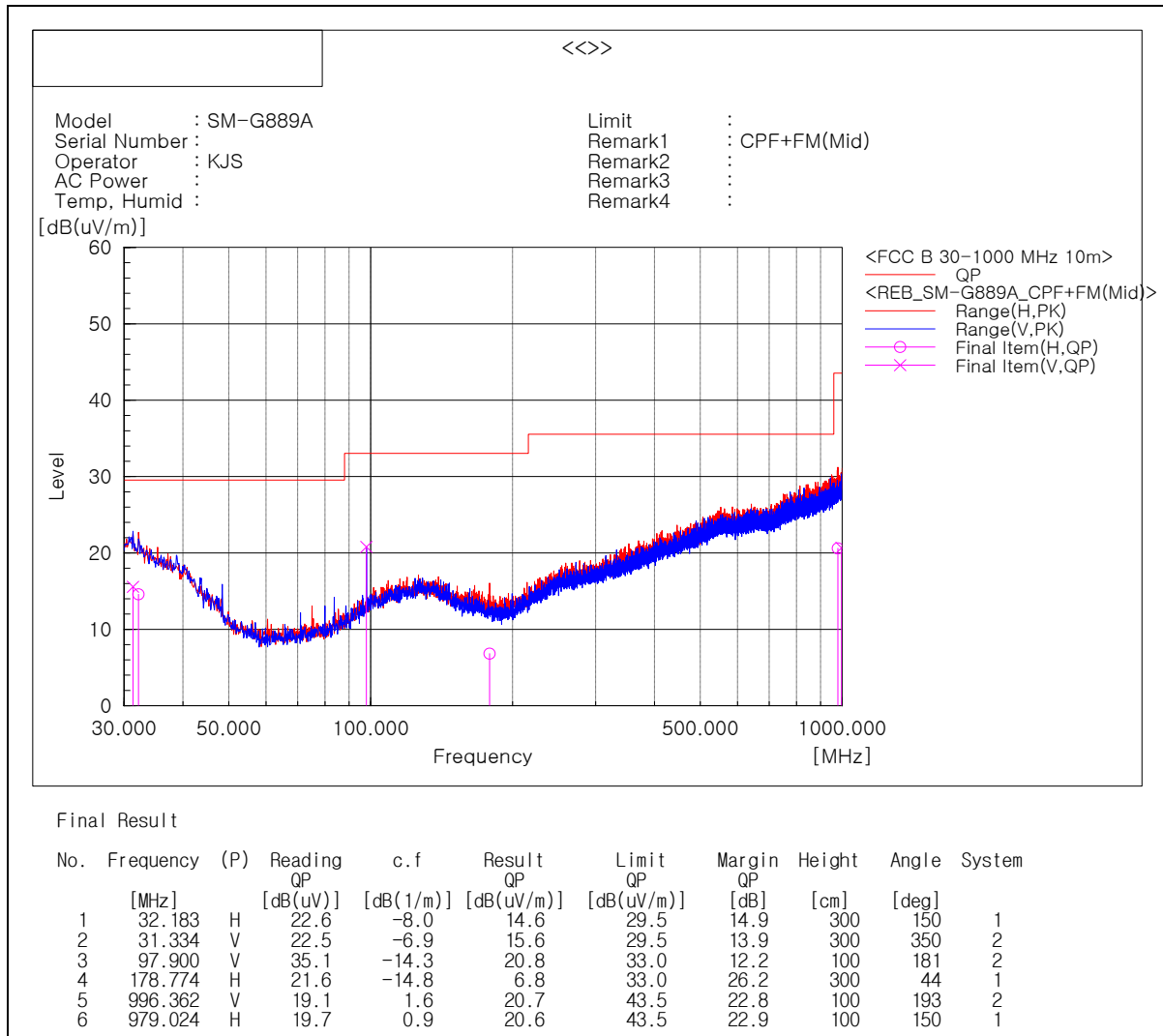
Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 2

- Frequencies below 1 GHz



* Radiated emissions (Rx frequency 97.900 MHz) from the transceiver shall be ignored

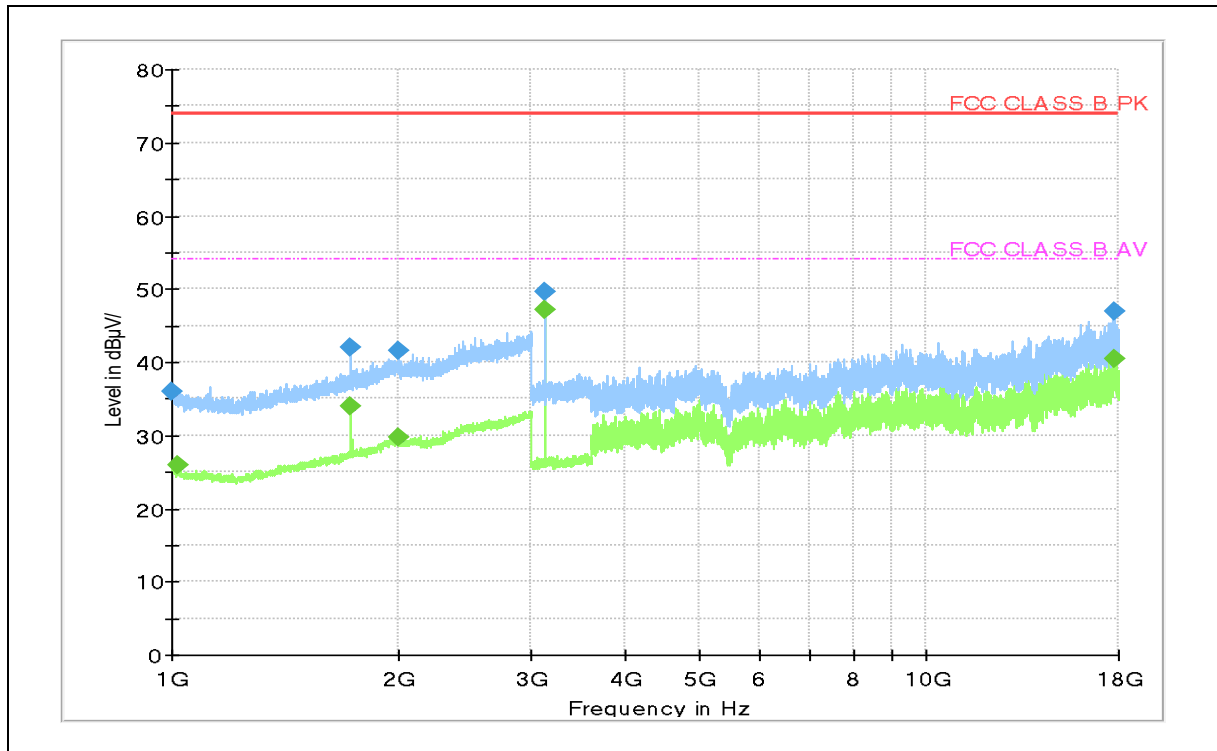
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz

Frequency (MHz)	PK (dBμV)	CAV (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 001.000	35.9	---	74.0	38.1	100.0	V	120.0	7.0
1 018.000	---	25.9	54.0	28.1	100.0	H	84.0	6.5
1 723.500	---	34.0	54.0	20.0	100.0	H	101.0	10.2
1 723.500	42.0	---	74.0	32.0	100.0	H	101.0	10.2
1 994.500	---	29.7	54.0	24.3	100.0	H	147.0	12.3
1 997.500	41.6	---	74.0	32.4	100.0	H	284.0	12.3
3 131.500	49.5	---	74.0	24.5	100.0	H	77.0	1.2
3 132.000	---	47.1	54.0	6.9	100.0	H	77.0	1.2
17 766.000	---	40.4	54.0	13.6	100.0	H	19.0	30.4
17 793.000	47.0	---	74.0	27.0	100.0	H	120.0	30.5

Note 1) We have also tested from 18 GHz to 30 GHz and found no emissions

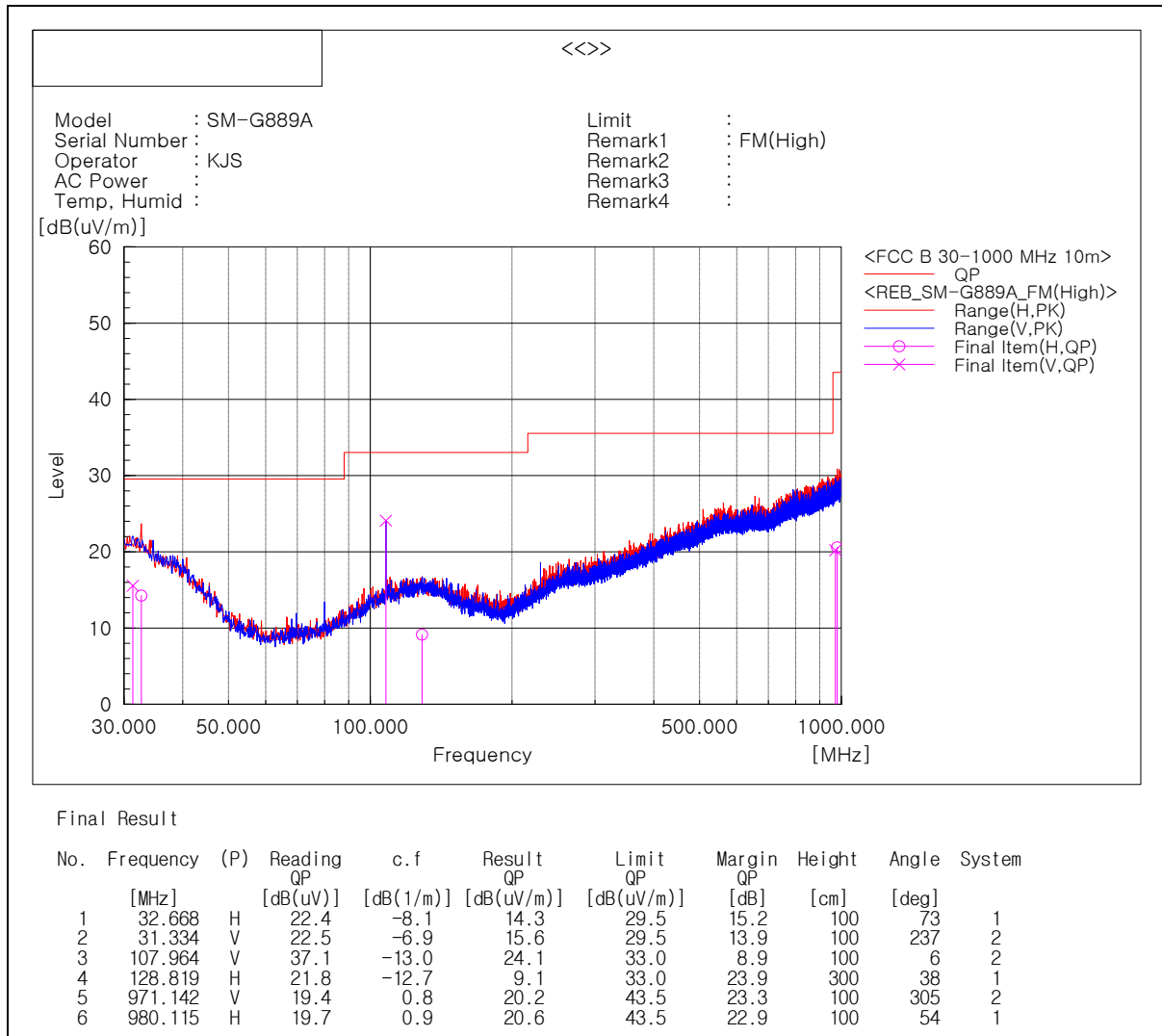
Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 3**- Frequencies below 1 GHz**

* Radiated emissions (Rx frequency 107.964 MHz) from the transceiver shall be ignored

Note1) Receiving antenna polarization : Horizontal, Vertical

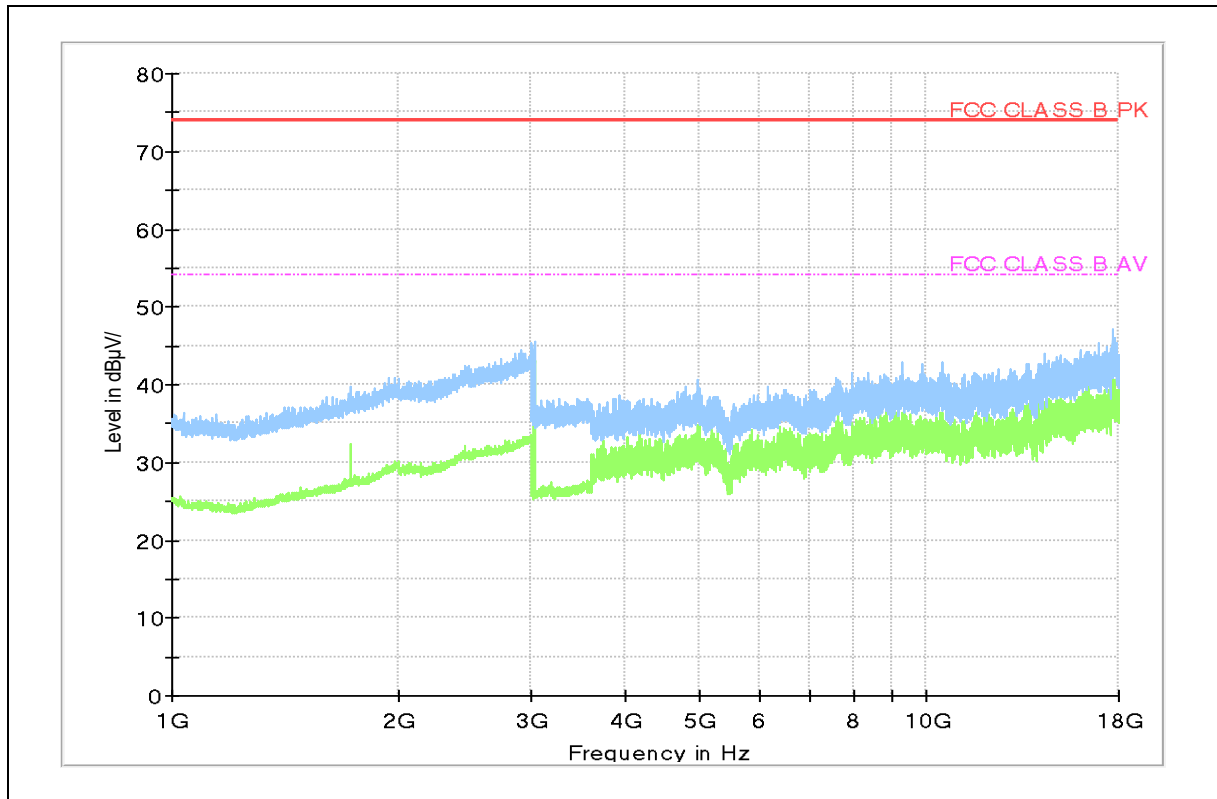
Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz



Note 1) We have also tested from 18 GHz to 30 GHz and found no emissions

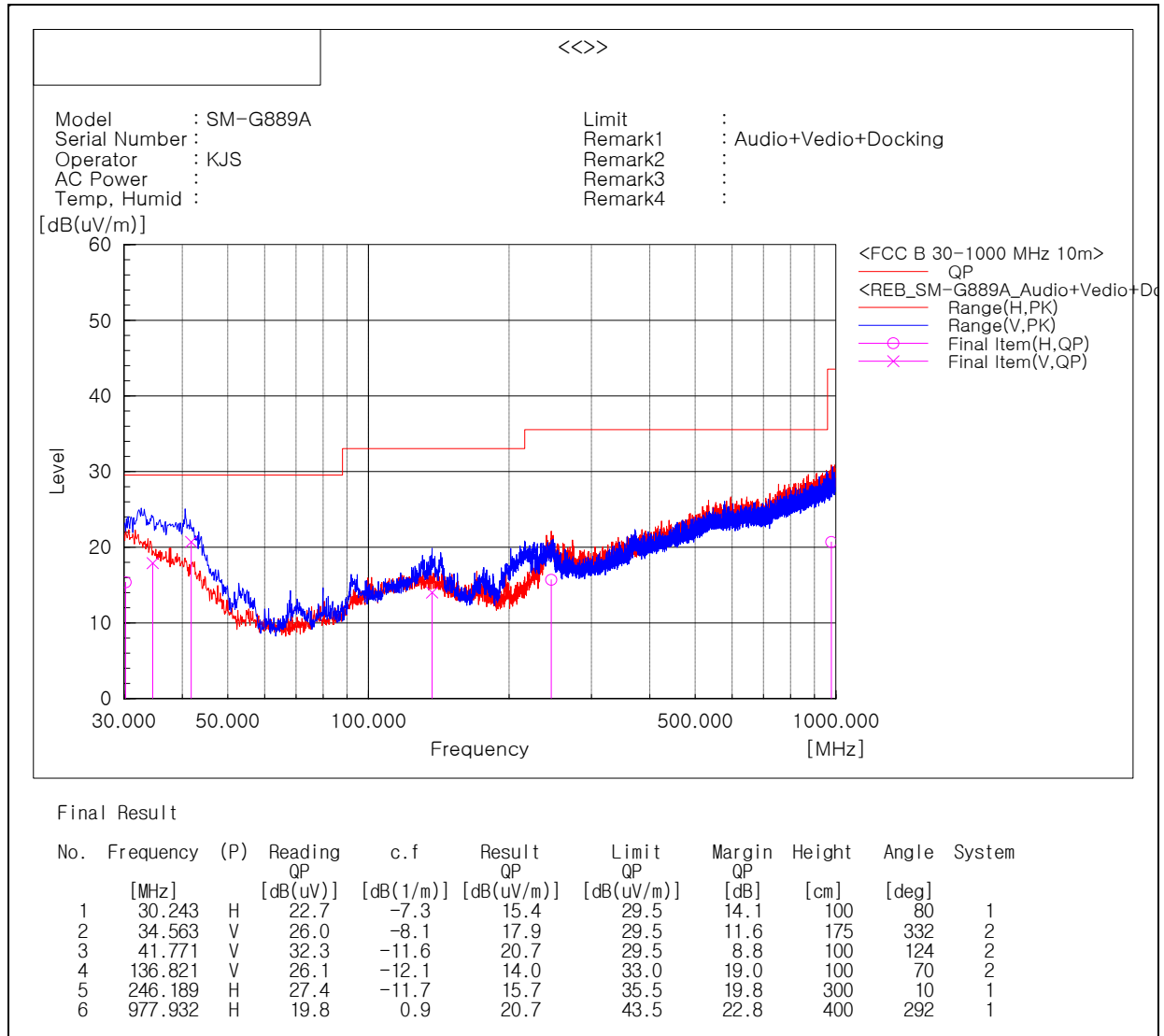
Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 4**- Frequencies below 1 GHz**

Note1) Receiving antenna polarization : Horizontal, Vertical

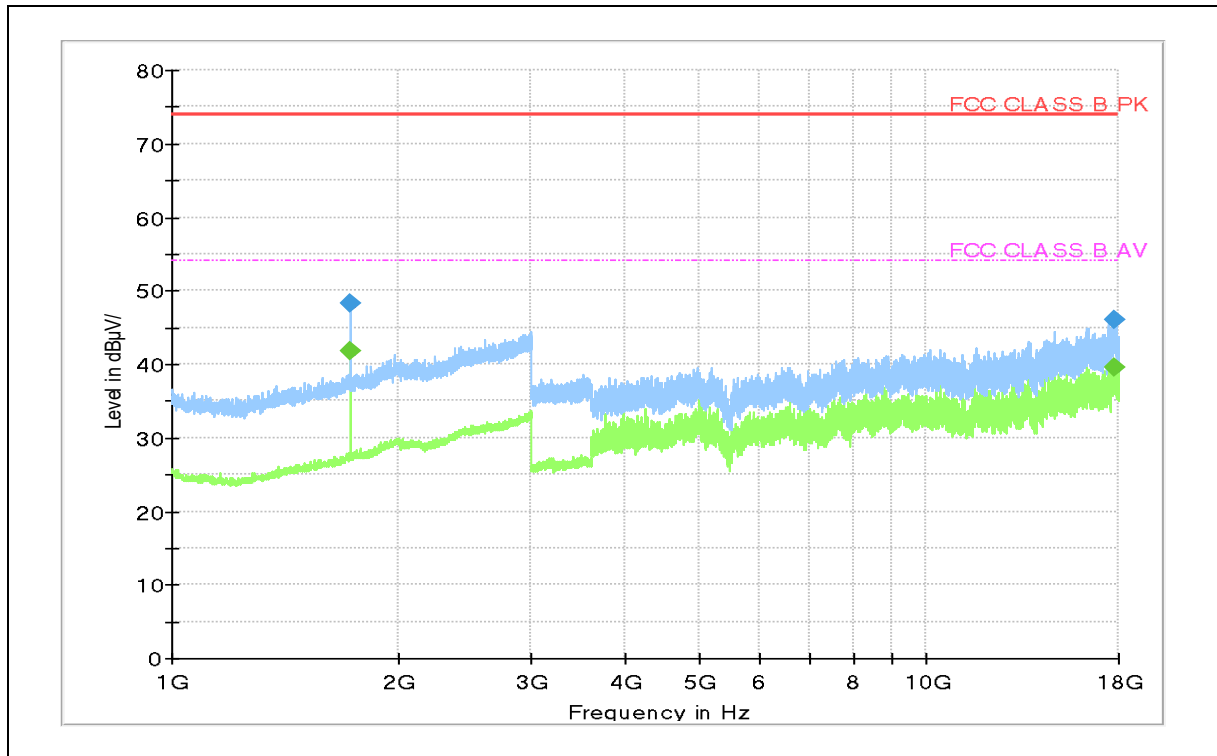
Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz



Frequency (MHz)	PK (dBμV)	CAV (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 722.500	---	41.8	54.0	12.2	100.0	V	54.0	10.2
1 722.500	48.3	---	74.0	25.7	100.0	V	54.0	10.2
17 780.000	46.1	---	74.0	27.9	100.0	H	291.0	30.4
17 811.500	---	39.5	54.0	14.5	100.0	V	295.0	30.5

Note 1) We have also tested from 18 GHz to 30 GHz and found no emissions

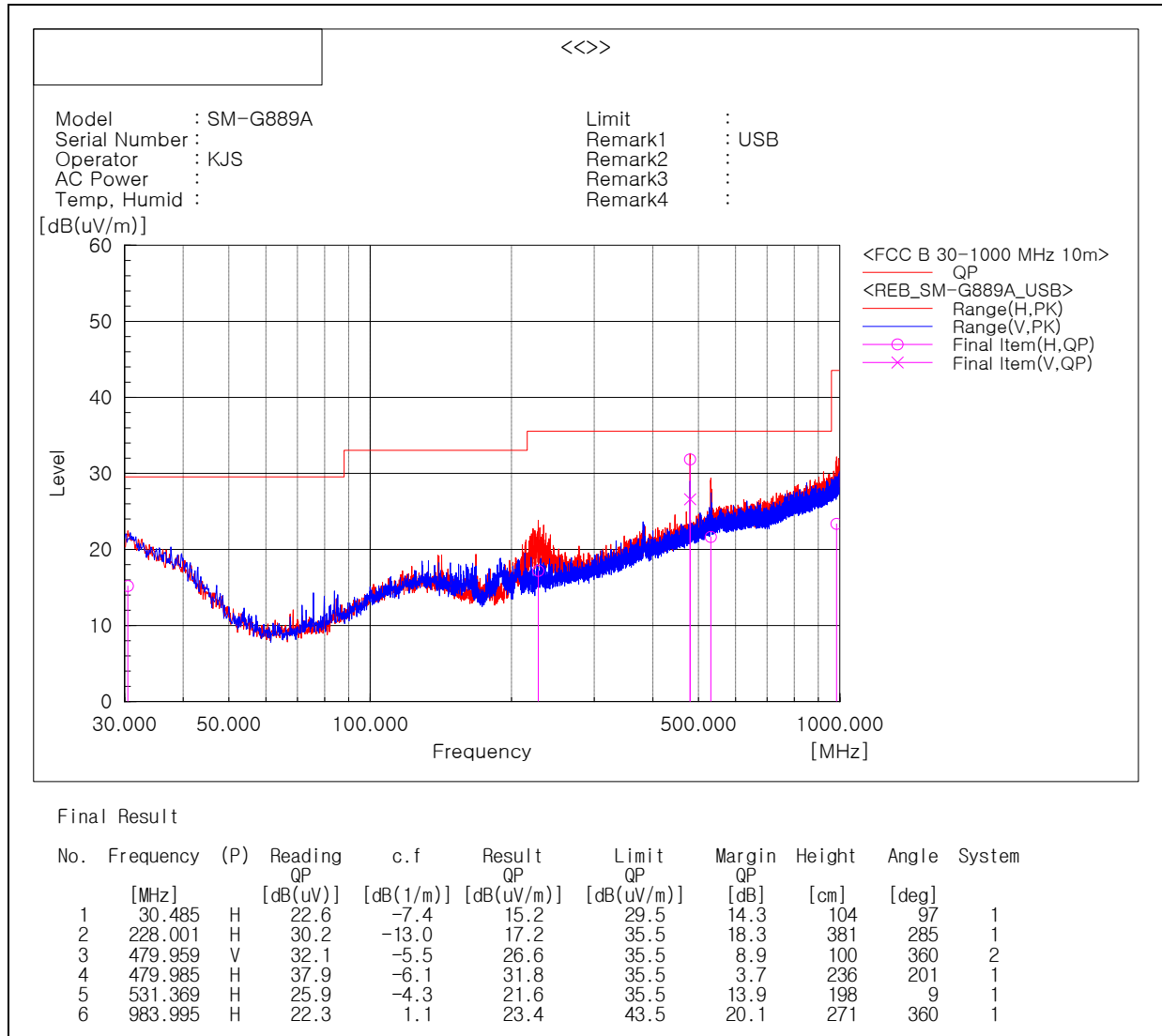
Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor

☐ Operating Mode 5**- Frequencies below 1 GHz**

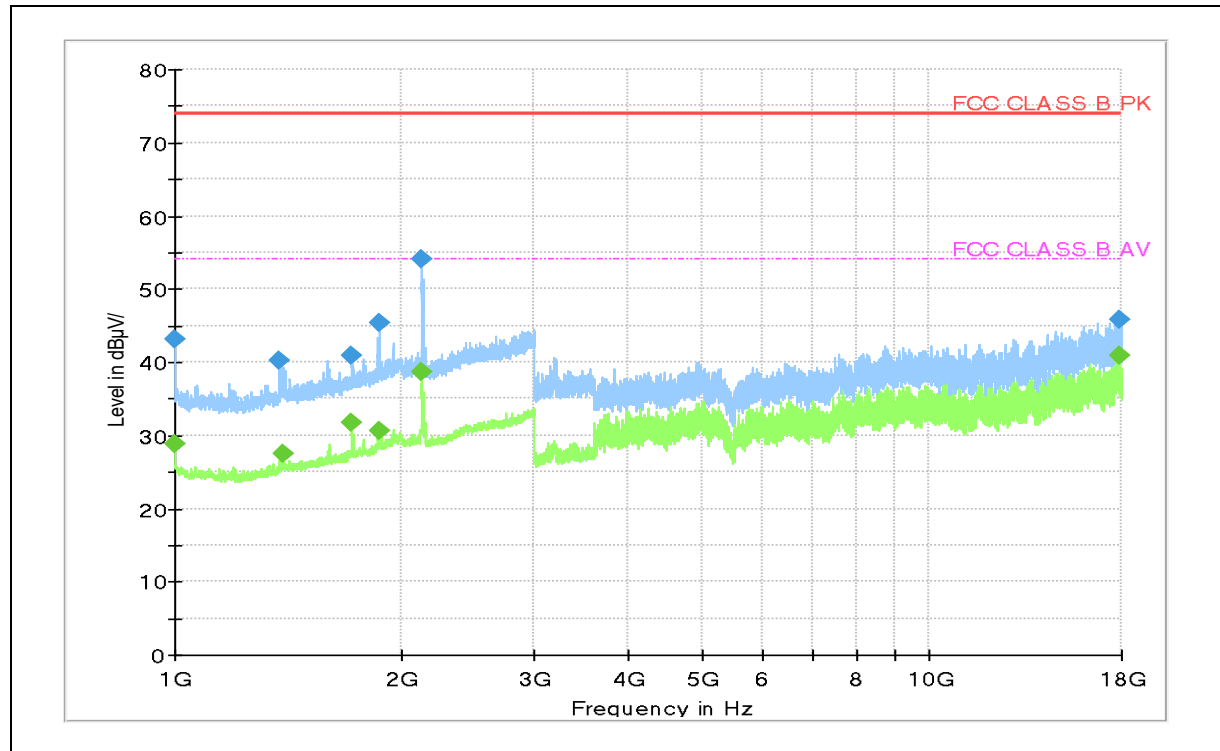
Note1) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 10 m, Antenna Height : 1 to 4 meters

Result (QP) = Reading (QP) + c.f (Antenna Factor + Cable Loss - Amp. Gain)

Margin (QP) = Limit - Level (QP)

QP = Quasi-Peak, c.f = Correction Factor

- Frequencies above 1 GHz

Frequency (MHz)	PK (dBμV)	CAV (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1 000.000	---	28.8	54.0	25.2	100.0	H	343.0	7.0
1 000.000	43.2	---	74.0	30.8	100.0	H	343.0	7.0
1 374.500	40.3	---	74.0	33.7	100.0	V	287.0	7.6
1 391.500	---	27.5	54.0	26.5	100.0	H	337.0	7.8
1 717.500	---	31.7	54.0	22.3	100.0	V	182.0	10.2
1 719.000	40.9	---	74.0	33.1	100.0	V	182.0	10.2
1 863.000	---	30.6	54.0	23.4	100.0	V	112.0	11.1
1 866.500	45.3	---	74.0	28.7	100.0	V	0.0	11.1
2 123.500	54.0	---	74.0	20.0	100.0	V	258.0	12.4
2 126.000	---	38.7	54.0	15.3	100.0	V	258.0	12.4
17 878.000	---	40.9	54.0	13.1	100.0	H	195.0	30.5
17 879.500	45.8	---	74.0	28.2	100.0	H	0.0	30.5

Note 1) We have also tested from 18 GHz to 30 GHz and found no emissions

Note 2) Receiving antenna polarization : Horizontal, Vertical

Test Distance : 3 m, Antenna Height : 1 to 4 meters

Level (PK and/or CAV) = Reading (PK and/or CAV) + Corr. (Antenna Factor + Cable Loss - Amp. Gain)

Margin (PK and/or CAV) = Limit – Level (PK and/or CAV)

PK = Peak, CAV = CISPR-Average, Corr. = Correction Factor